Chapter 2

Cyberspace and its implications

2.1 Cyber space defined

Cyberspace (from Greek Κυβερνήτης [kybernētēs] meaning “steersman”, “governor”, “pilot”, or “rudder”) is the global domain of electromagnetics as accessed and exploited through electronic technology and the modulation of electromagnetic energy to achieve a wide range of communication and control system capabilities. It is a metaphor for describing the non-physical terrain created by computer systems. Online systems, for example, create a cyberspace within which people can communicate with one another (via e-mail), do research, or simply window shop. The term cyberspace was actually invented by William Gibson and used in his 1984 novel, *Neuromancer*. “A consensual hallucination experienced daily by billions of legitimate operators, in every nation, by children being taught mathematical concepts... A graphic representation of data abstracted from the banks of every computer in the human system. Unthinkable complexity. Lines of light ranged in the non-space of the mind, clusters and constellations of data. Like city lights, receding...”1.

The term “Cyberspace” often brings with it connotations of an imaginary world, a non-world, a simulated or unrealized space. Disregarding the conceptual idea of Cyberspace, however, it is an authentic, perceptual space made up of computer bases, hardware, modems, telephone lines, electrical lines, satellite stations and human beings. Within these tangible elements lie the components for a sense of space generated within the mind, a dimension called as Cyberspace. Like

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physical space, cyberspace contains objects (files, mail messages, graphics, etc.) and different modes of transportation and delivery. Unlike real space, though, exploring cyberspace does not require any physical movement other than pressing keys on a keyboard or moving a mouse. Buzzing through real, physical wires at lightening speeds, events take place and are recognized by users who may be thousands of physical miles away from the event itself. Now ubiquitous, the term has become a conventional means to describe anything associated with computers, information technology, the internet and the diverse internet culture.

Webster’s Collegiate Dictionary even defines Cyberspace as an “online world of computer networks”. Oxford English Dictionary describes it as: “The notional environment within which electronic communication occurs”. As per the Merriam-Webster Third New International Dictionary, it is: “the on-line world of computer networks.” Modern legal writers have extended the term to include all forms of computer mediated communications and interactions. The metaphor used to describe the “sense of a social setting that exists purely within a space of representation and communication, it exists entirely within a computer space, distributed across increasingly complex and fluid networks.” (Slater 2002) The term “Cyberspace” started to become a de facto synonym for the internet, and later the World Wide Web, during the 1990s, especially in academic circles and activist communities. Author Bruce Sterling, who popularized this meaning, credits John Perry Barlow as the first to use it to refer to “the present-day nexus of computer and telecommunications networks.” Barlow describes it thus in his essay to announce the formation of the Electronic Frontier Foundation (note the spatial metaphor) in June, 1990: “In this silent world, all conversation is typed. To enter it, one forsakes both body and place and becomes a thing of words alone. You can see what your neighbors are saying (or recently said), but not what either they or their

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physical surroundings look like. Town meetings are continuous and discussions rage on everything from sexual kinks to depreciation schedules. Whether by one telephonic tendril or millions, they are all connected to one another. Collectively, they form what their inhabitants call the Net. It extends across that immense region of electron states, microwaves, magnetic fields, light pulses and thought which sci-fi writer William Gibson named Cyberspace.\(^3\)

These abstract, yet accurate definitions illuminate the difficulty in defining this strange new place where millions of people traverse every day. Regardless of the meaning or the original intent of the metaphor, computers, humans and consciousness do exist and intersect in this environment. Cyberspace is an actualized and valid dimension of space whereby we interact and react and change our existence.\(^4\)

### 2.2 Implications of Cyberspace

Cyberspace is evolving rapidly into a highly dynamic space, one that is supportive of varied transactions and interactions. It has become decisive in sociocultural transformations taking place worldwide. By now cyberspace has become more a necessity than a luxury in many parts of the relatively developed world. What differentiates the cyber-revolution from previous revolutions is that it is a revolution in consciousness. The novelty of the new technology is that it operates so much at deep levels of consciousness. Physical and material worlds have been conquered and rendered fluid; now it is the turn of cognition. The future will be shaped by two kinds of generations, one experiencing more intoxicating powers while for the other deeper and deeper hopelessness. The pace of technological innovation, however, is outstripping even the increases in traffic and destinations. It offers a variety of services to the users and most services in turn offer a large

\(^3\)Available at http://w2.eff.org/Misc/Publications/John_Perry_Barlow/crime_and_puzzlement.l.txt.
\(^4\)Ibid.
number of resources and vice versa. Worse, the momentum of cyber technology does not allow time for reflection, viable dissent or a change of direction⁵.

2.3 Cyberspace and Information

“Never before in the history of the planet have so many people- on their own- had the ability to find so much information about so many things and about so many other people”.

Friedman (2005)⁶

Many nations are embracing the concept of open and unrestricted access to public sector information-particularly scientific, environmental, and statistical information of great public benefit. Government information is a valuable national resource and that the economic benefits to society are maximized when taxpayer funded information is made available inexpensively and as widely as possible. It actively encourages the development of a robust private sector, offering to provide publishers with the raw content from which new information services may be created, at no more than the cost of dissemination and without copyright or other restrictions⁷. In the United States (US), open and unrestricted access to public sector information has resulted in the rapid growth of information intensive industries particularly in the geographic information and environmental services sectors. The Cyberspace has often been portrayed as the ultimate leveler of information where existing hierarchies of power and privilege are undermined by meritocracy⁸. Now a day the cyberspace is the first port of call for information. This is a consequence of the fact that information is available readily and usually free⁹. The use of the cyberspace as a learning space has revolutionized education where resources found at home, museums, libraries, and universities are woven

⁷Available at www.nws.noaa.gov/sp/Borders_report.pdf
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together to transform individual learners, who collaborate in distinctive new ways, into a community of learners joined not by geographical location but by common interests. Cyberspace is almost all about information\textsuperscript{10}. Moreover, the sophisticated search engines in the cyberspace provide us with a lot of information, which in the real world is difficult and costly to obtain. Online information sources are dynamic\textsuperscript{11}. Information can be obtained in cyberspace from use of number of tools such as blogs, wikis, RSS feeds, tagging, podcasts and mash ups, folksonomies, etc.

\textbf{a) Search Engines}

According to Computing Dictionary, “Search engine is a program that allows users to locate specified information from a database or mass of data. Search engine sites are extremely popular on the World Wide Web because they allow users to quickly sift through million of documents on the Internet”. Cyberspace is being used to access expert knowledge (which is an indirect form of communication) and have an expectation of being able to communicate with anyone, about anything, when they want to. New forms of collaboration are emerging in cyberspace both with peers and via new ‘smart’ and adaptive technologies. Search engines are also used to find news articles\textsuperscript{12}.

\textbf{b) The Google searchers}

Google has become the students’ favorite way of searching for information, and this has led to the use of a new verb “to google”. The simplicity of its front page has compared favourably with that of databases and most library home pages. Google has become this generation’s reference desk\textsuperscript{13}.


\textsuperscript{13}ibid.
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c) The Wikipedia

The Wikipedia is an online, collaborative encyclopedia to which anyone who wants to contribute can do so. It is not just used for searching, but also make people become contributors, writing articles about, say, local activities, places, or traditions that the Wikipedia does not already contain. Even medical school professors claim that the Wikipedia is full of useful information not easily found anywhere else14.

d) Podcasting

Podcasting is the technology of creating audio (usually MP3) or video files that are then distributed over the cyberspace for others to hear and watch (either directly online or by downloading to personal devices). Podcasts are a type of broadcasting which allows individuals to record, publish, find, subscribe and listen over the internet using a portable player. Some have even described podcasts as the new “tranny”. This technology allows great opportunities for academic star performers, who have good voice projection15.

e) Mashups

Mashups are websites or web applications which use content from more than one source to create a completely new service. Such content often sources by use of various application programme interfaces, web feeds and JavaScript. Crucially these mashups require little technical knowledge. For example Google Maps have been used with other data sources accessible on the internet to provide new services16.

14 Available at http://www.eclecticlibrarian.net/blog/archives/000732.html.
16 Ibid, at 281.
2.4 Cyber space and Communication

In society there are numerous ways in which people have changed the way they communicate in the last 50 years. Traditionally, social interaction in the local community was the basis for communication – face to face. Yet, today face-to-face meetings are no longer the primary way to communicate as one can use a landline telephone, mobile phones or any number of the computer mediated communications. Electronic mail, videoconferencing, discussion boards, and traditional methods such as teleconferencing are just a sampling of the many alternatives that facilitate communication in cyberspace. Thus Cyber space is increasingly being used in a variety of different ways to communicate with friends, family, peers and tutors.

a) E-mail

Electronic mail, often abbreviated as email, e.mail or e-mail, is a method of exchanging digital messages, designed primarily for human use. E-mail systems are based on a store and forward model in which e-mail computer server systems accept, forward, deliver and store messages on behalf of users, who only need to connect to the e-mail infrastructure, typically an e-mail server, with a network-enabled device (e.g., a personal computer) for the duration of message submission or retrieval. E-mail is widely accepted by the business community as the first broad electronic communication medium and was the first ‘e-revolution’ in business communication. Much of the business world relies upon communications between people who are not physically in the same building, area or even country; setting up and attending an in-person meeting, telephone call or conference call can be inconvenient, time-consuming, and costly. E-mail provides a way to exchange

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information between two or more people with no set-up costs and that is generally far less expensive than physical meetings or phone calls. With real time communication by meetings or phone calls, participants have to work on the same schedule, and each participant must spend the same amount of time in the meeting or call. E-mail allows asynchrony: each participant may control their schedule independently, that too without any restriction of time. It is found to be the most used tool of distance collaboration. The services providing free of charge mail to users on internet are Gmail, Yahoo Mail, Hotmail, etc.\textsuperscript{18}

With the introduction of chat messengers and video conference there are more ways to communicate in cyberspace.

b) \textit{Videoconferencing}

It is a virtual communication tool that provides an alternative to face-to-face meetings. It allows research team members to see and hear each other along with collaborating on shared documents. This recreation of face-to-face interaction makes more complex levels of communication possible for collaborative teams\textsuperscript{19}.

c) \textit{File Transfer Protocol}

File transfer protocol, or FTP, is a method of transferring files from one computer to another over the Internet. Files can be any size and contain text, graphics, audio, or video, etc\textsuperscript{20}.

d) \textit{Discussion Boards}

The discussion board, as a shared research team workspace, is useful for reporting on the status of work activities, posting questions, setting deadlines, and

\textsuperscript{18} N.Cavus and H.Bicen, “A study to find out the preferred free e-mail services used by university students,” Vol. 1, Procedia Social and Behavioral Sciences, 419 (2009).
\textsuperscript{20} Ibid.
holding general conversations. A group discussion space allows easy review of group knowledge and enables a base of common knowledge to be built\(^\text{21}\).

e) **Instant Messaging Programs**

When a lack of financial resources is a barrier to research collaboration, synchronous text-based messaging programs can be beneficial. Available without cost, these programs can provide a transcript of a virtual meeting, which can be stored for later reference. It is described as "social software" because it tends to be used between people in a close relationship\(^\text{22}\).

f) **Blogging: The new social buzzword**

Blogs, short for Web logs, are social networking sites i.e., web sites that connect people and allow them to communicate with each other. It first appeared when journalists in remote places wanted to post stories and commentary about their war time experiences that they couldn’t get out through other communication channels. Blogs then went mainstream, becoming personal online journals, where entries could be posted by the blog owner and comments added by those visiting the blog. This frequent updating and interaction makes blogs much more dynamic than most websites. Weblogs or blogs are one of the emerging technologies offering flexible and accessible opportunities for implementing student-centred pedagogical practices\(^\text{23}\).

Blogs offer an environment where people can share their ideas and feelings with friends and family or with others who have similar interests, or even with the public at large. They encourage creativity, expression, and interaction. The

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\(^\text{21}\) Ibid.


“blogosphere” has become like a global brain, a kind of collective intelligence and a vital part of cyberspace culture. These social network sites allow individuals to create profiles which can include personal interests, hobbies, and pictures. Each piece of information links the user to the others with similar interests, and thereby interest groups can be created. Web users are reviewing films, recommending books, publishing journals, sharing files, and exchanging favorites. The immediacy, quickness and comprehensiveness of blogosphere are becoming so great that it cannot be ignored as an information source. Blogs are primary material, which may be scholarly and facilitate instant sharing of ideas besides lively debate. Blogging encourages community creativity, interaction and reflection, i.e. all key attributes of the information which literate students. It can motivate students and allow ideas to be aired, encourage reflection and lead to a synthesis of ideas.

**g) Internet Relay Chat**

Cyberspace has transformed human communication. Computer-mediated communication (CMC) refers to the use of computer and telecommunication networks to compose, store, and deliver communication. Internet Relay Chat (IRC) has been an Internet-based CMC, which provides a synchronous interactive communication. IRC is a network program that allows cyberspace users to talk to each other in real time by typing lines of text. It is a more synchronous and interactive communication instrument than e-mail and BBS (Bulletin Board System). It is most likely to be used among people who have never met.

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24 Available at www.edublog.net/astinus/int/files/docs/apen%20paper-chongeddy.pdf.
h) Net Generation

The cyberspace and digital technologies have touched all aspects of our lives. It has led to evolution of a new generation that has many labels including the Net Generation, Generation Y, Millennial, and Generation Me. This Net Generation has ten attributes reflecting values and behaviors that make up “the information-age mindset.” The first four relate to broad observations of change, three address how people do things and the last three are subliminal needs conditioned by the cyber age.26

i) “Computers Aren’t Technology,”

ii) “Internet Better Than TV,”

iii) “Reality No Longer Real,”

iv) “Doing Rather Than Knowing”,

v) “Nintendo over Logic,”

vi) “Multitasking Way of Life,”

vii) “Typing Rather Than Handwriting”,

viii) “Staying Connected,”

ix) “Zero Tolerance for Delays,” and

x) “Consumer/Creator Blurring”.

This information-age mindset is distinctly different from the mindset of those of us, who have transitioned from the industrial age, is common among students growing up in the globally connected, service- and information- intense, digitally based culture. One consequence of being a digital native is that the Net generations are starting to change the norms, assumptions, and practices of what

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had once been relatively stable activities. They communicate differently (e.g., text messaging and instant message). They use a different written language. They interact and socialize differently (e.g., via avatars in online games and face book). They have a different sense of authorship (e.g., Flicker and personal blogs). And most important to the context of academy, Net Gener’s affinity for technology translates into new and different expectations about how to gather, work with, translate, and share information.27

2.5 Cyber space and Commerce

Cyber space plays important role in trade and commerce. Different categorizations of electronic commerce (e-commerce) exist, including business-to-consumer, business-to-business, and government-to-constituents. Business-to-consumer (B2C) e-commerce is defined as business transactions conducted between corporations and individual consumers. This is often represented as corporations’ Web sites used to sell goods and services directly to consumers. Business-to-business (B2B) e-commerce is defined as transactions conducted electronically between organizations. Government-to-constituents (G2C) e-commerce defines the electronic relationship between the governments and various constituents including businesses, individuals, employees and other government agencies.28 The advantages of use of cyberspace in commerce are:

a) Reduces transaction cost

When a rational person plans to purchase a good in the non-virtual market, a necessary preparatory activity is to inquire at shops and suppliers about prices.

quality and other product conditions. This is not an easy task. It requires time and resources. A rational person will make such inquiries until the marginal benefits from further inquiries equal the marginal costs of such activity. In any case, the costs inflicted, even up to this stage, constitute an imperfection of the market. The equivalent picture in Cyberspace is very different. With the tip of a finger, the Cyber-customer can run various software programs that compare prices, quality, contractual clauses, and other pieces of information. Some of these programs can go even further and conduct the transaction. Likewise, as the production and distribution of information are easier and cheaper than in the non-virtual world, customers who are not satisfied with the product (or vice versa) can easily make their dissatisfaction a common knowledge. Although this activity in Cyberspace is not totally costless, at the same time frame one can obtain more significant information for a much smaller investment.\footnote{V. Rajaraman, “Building blocks of e-commerce,” Vol. 30, Sadhana, 89-91 (2005).}

Transaction costs in Cyberspace are lower. They emphasize the reduced costs of searching for information, exchanging information, and the fast and efficient transmission of information. Thus, parties may efficiently search the Web for information on their counterparts: other businesses in which they are engaged, the background of their executives, or the history of their products. Parties may efficiently find out what other products or services are available at what price and under what terms. As the transaction costs in Cyberspace are lower, Cyberspace is likely to facilitate more transactions quickly.\footnote{Ibid.}

\textbf{b) Helps in International trade}

Anecdotal evidence that the cyberspace has affected international trade is everywhere. Women in a remote part of Guyana are using the Internet to sell hand-woven hammocks to people around the world. An importer in the Dominican
Republic found a Bolivian supplier of Soya oil and a Chinese supplier of sewing machines in the cyberspace. A producer of draperies and other goods from Hicksville, Long Island is using the cyberspace to negotiate deals in Turkey, Saudi Arabia, and South Africa, after years of serving only the domestic market. Of greater importance for sheer trade volumes, global business-to-business web sites have already been set up in a number of industries. Some examples include Sci Quest, a global marketplace for laboratory and scientific materials; Commerx, a global exchange for plastics, metals, and packaging materials; and e-Steel, which links buyers and sellers of steel products around the world. In one well-known example, Daimler-Chrysler, GM, and Ford founded COVISINT, an Internet-based market for car parts that aggregates thousands of suppliers worldwide. Such initiatives are not limited to industrialized countries. The fast-moving and fragmented fresh flower business in Ecuador relies on e-marketplaces such as florastream.com to match buyers with sellers and facilitate logistics. A web-based market is being developed in greater China for international suppliers of agricultural products. It has been found that the cyberspace stimulates trade.\(^{37}\) Evidence from time-series and cross-section regressions has showed a significant effect of the cyberspace on trade in recent years. Cyberspace reduces market-specific fixed costs of trade. In particular, a cyberspace-related reduction in fixed costs is likely to enhance export growth, simultaneously. The research results suggest that a 10 percentage point increase in the growth of web hosts in a country leads to about a 0.2 percentage point increase in export growth.\(^{32}\)

c) Helps in Banking

In a related matter, corporate financial transactions – transactions involving businesses and/or financial institutions - have been occurring online for years. Wire


\(^{32}\)Ibid.
transfers and electronic funds transfers are now commonplace, and major banks are changing their policies to promote even greater use of online processing. Online electronic banking systems give everybody the opportunity for easy access to their banking activities. These banking activities may include: retrieving an account balance, money transfers between a user’s accounts, from a user’s account to someone else’s account, retrieving an account history. Some banks also allow services such as stock market transactions, and the submission of standardized accounting payment files for bank transfers to third parties.\textsuperscript{33}

2.6 Cyberspace and Education

As cyberspace becomes increasingly integrated into virtually every aspect of social living, there are few human activities that do not involve the use of cyberspace in some form or the other, a rule to which the process of learning is no exception. With the widespread use of computers, modems, Internet connections, and e-mail software, students and their mentors can break down the barriers of time and distance using the cyberspace. Technology is constantly re-invented to support learning activities and there is a complex co-evolution of tools and their use.\textsuperscript{34} The cyberspace has quickly found its way into many businesses, homes and classrooms. Education in cyberspace is more often referred as e-learning or online learning. One of the most obvious features of development in the field of education today is the rapidly increasing emphasis placed on cyberspace and its impact on classroom instruction. The merger of computer technology with traditional methods of classroom instruction has the potential to facilitate both teaching and learning across a wide variety of educational topics and settings. People can expose

themselves to oceans of books, films and other cultural items, all the items could be collected virtually in a symbolic way. Secondly, they could personalize their item-list by creating their own cataloguing system by separating the items into “consumed” ones and “desired but not yet obtained” ones, as well as adding their own “tags” onto every single item. Thirdly, People can also rate and comment on the items, and read how others have talked about them and give their feedbacks. As cyberspace becomes more firmly entrenched in education, its prominence is displayed most clearly through the rapidly increasing use of the Internet and www sites in the classroom.

a) **Promise of the Internet**

Cyberspace can become a lifestyle that enriches in-person living, that offers people new opportunities for learning and self-expression. Cyberspace enables education to occur in places where there is none, extends resources where there are few, expands the learning day, and opens the learning place. It helps:

i) To center learning around the student instead of the classroom.

ii) To focus on the strengths and needs of individual learners.

iii) To make lifelong learning a practical reality.

It connects people, communities, and resources to support learning. It adds graphics, sound, video, and interaction to give teachers and students multiple paths for understanding. Simulations, models, and visualization tools can make it possible for students to bridge experience and abstraction, helping to deepen understanding of ambiguous or challenging content. For example, “Model-It” is a tool students use to create models that represent their theories about scientific

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phenomena. “SimCalc” has made it possible for inner-city middle school students to learn pre-calculus with the aid of visualization tools for understanding functions. The cyberspace opens the classroom door to authentic issues and problems that can form the basis of guided, reflective inquiry through extended projects. The online environment provides opportunity to get to know fellow students and the instructor in ways not experienced in the traditional classroom 37.

b) Provides tools for learning and research

The resources of the cyberspace give students access to more information than is often found in textbooks, locating primary historical source materials, texts, artifacts, and works of art that are equal to the resources used by real historians, scholars, and scientists. The type of information available on the Internet include directories, statistical databases, universities’ prospectuses, company profiles, product information, libraries’ on-line catalogues, weather charts, census data and many other categories of the information. The cyberspace has been considered as a forum for users to share world-wide information resources. Cyberspace tools allow students to work with resources and tools that are not available in their own schools. Students can access cyberspace resources at other world-class institutions just by a mouse click. They become their own historians by going right to primary documents and archival sources. The public nature of the cyberspace gives students a chance to share what they learn with others. Clarity and accuracy take on new meaning to students when they share their products with people outside the classroom. Teaching others is the most powerful way to learn. Cyberspace -based projects encourage students’ collaborative construction of meaning through different perspectives on shared experiences38.

c) **Helps tracking students online behavior**

Today’s academic enterprise systems provide a unique opportunity to study student behavior across and between courses and terms. Data collected by these systems provides researchers with opportunities to track not only where a student goes online within a course, but also how much time they spend at various destinations, how often they return, and the various tools they use. By studying this data, researchers may assist faculty in tailoring their teaching to optimize student success; guide instructional designers in developing learning resources and organizing courses that facilitate engagement; and help students to understand more completely their own studying and learning behaviors\(^39\).

d) **Helps in promoting distance learning**

The rapid growth of the cyberspace and the www made online distance education (DE) possible. Online DE is also called e-learning, Web-based education, or Web-based training. Online program guides participants through a variety of online activities in order to help them address some specific personal issue, as well as encourage self-insight on a broader level. These activities include locating and evaluating information, joining discussion/support groups, establishing one-on-one relationships with knowledgeable people, experimenting with different types of online communication, utilizing and evaluating online psychological tests, creating a personal web page, and experimenting with freeform browsing techniques\(^40\).

With enrollments in completely online programs increasing dramatically and a widening proliferation of online components to traditional courses, there is increasing focus on electronic journals and eBooks as source of information in

\(^39\)Ibid.
cyberspace. E-book collections, such as ebrary and Netlibrary, provided an economical opportunity to fill gaps in our print collection. With an institutional focus on distance education, e-books seemed to provide the obvious solution for how to serve users who will never come to campus. Such academic offerings provide students with an important advantage in that they can take coursework at any higher education institution, or pursue studies at their local college or university without having to come to campus. Such flexibility is essential in creating distributed learning environments that can increase students’ opportunities for learning and academic achievement.

e) Helps collaboration between academicians

The cyberspace is a valuable resource for educators. It has by and large become an international, virtual meeting place for increasing number of teachers, students, and subject matter experts round the globe. Teachers can take advantage of the increase in cyberspace access by using it to collaborate with other professionals, access information for lessons, and allow students to conduct research, among many other activities. Cyberspace provides better methods of collaboration and interaction between personnel using technologies such as Voice over Internet Protocol (VoIP) and multimedia protocols such as video-conferencing, Web-casting and Instant Messaging. The capabilities of the Internet and many private networks have ensured that all these functions are able to run across existing infrastructure, encouraging network convergence and reducing costs.

Educational research has been afforded many advantages as technologies have extended possibilities for collaborative interactions via distance. Collaborative

\[41\text{M.C. Smith and A. Winking-Diaz, “Increasing Student’s Interactivity in an Online Course,” Vol. 2, The Journal of Interactive Online Learning, 1 (2004).}\\ \]
\[42\text{J. Chau, “Security issues around the deployment of VoIP and multimedia protocols in wireless and firewalled environments” Vol. 8, Computer Fraud & Security, 14 (2006).}\\ \]
technologies can be broadly defined as those technologies enabling individuals and groups to communicate, collaborate, and interact to share knowledge and information. Computerized learning environments (CLEs) are systems that provide rich databases, tools, and resources to support learning and information seeking and retrieval, as well as individual decision making\textsuperscript{43}. Collaborative technologies can assist in virtual to virtual communication. Some of the tools which are helping in collaborative works are:-

\begin{itemize}
\item[i)] \textit{Digital Imaging}
\begin{quote}
Digital imaging is a new technology for capturing and presenting classroom data. The major benefit of this technology is the ability to involve more of the research community to interpret data\textsuperscript{44}.
\end{quote}
\item[ii)] \textit{Web Sites}
\begin{quote}
Web sites can benefit collaborative research in numerous ways. The technology is widely available and accessible by anyone, anywhere, at anytime. For the virtual team, Web sites provide an important communicative and informational resource. They allow collaborators to archive textual, visual, audio, and numerical data in a user-friendly format. Web sites also serve to coordinate interactions, keep other collaborators informed of the latest developments, and demonstrate new tools or discoveries. Because they are proven to be a rich source of qualitative information, Web sites make a significant contribution to the collaborative environment\textsuperscript{45}.
\end{quote}
\end{itemize}

\textsuperscript{44} Ibid.
iii) RSS feeds

RSS can stand for Rich Site Summary or Real Simple Syndication and what is at the heart of Web 2.0 technology. Weblogs and other sites can provide a “feed” in XML language, which enables anyone to subscribe to this content and receive it on their chosen page, thereby no longer having to repeatedly visit the site. These links cope with web pages, which continually change are therefore more powerful than bookmarks or links to a single page. Even though only a small number of Internet users are writing blogs, a slightly larger number of Net users are visiting them. This has led to the development of sites, which encourage users to collect their RSS feeds e.g. Blog lines. News feeds are a very valuable source for current news and Blog lines can also be used to aggregate these. Blog lines could also be used in teaching and used to amass material collected by researchers round the globe. Furthermore feeds can be collected on desktops or on portable devices like laptops, mobile phones etc. As replacement for services like table of contents alerts or e-journal sites, user net and bulletin-boards, the importance of this for researchers, receiving content regularly without effort is obvious. RSS feeds can of course apply equally to library databases delivered via the Web. This would encourage dissertation students and advanced researchers to collaborate and fully utilize the precious subscription databases\(^{46}\).

f) **Cyberspace and Telementoring**

The growth of technology brings new opportunities for mentoring; the cyberspace can offer online tutoring, ask-an-expert coaching, and e-mail linking of students with successful professionals in careers of mutual interest. Telementoring is a naturally occurring relationship or a paired relationship between a more senior individual and a lesser skilled or experienced individual, primarily using electronic

communications, and is intended to develop and grow the skills, knowledge, confidence, and cultural understandings of the lesser skilled individual to help him or her succeed. The American School Health Association (2001) defines telementoring as an “electronic version of mentoring, in which an older, more experienced person shares his or her experience and expertise with a younger protégé in a way that helps the protégé to achieve a goal or gain entry into a mentor’s world”. With the widespread use of computers, modems, Internet connections, and e-mail software, students and their mentors can break down the barriers of time and distance using the cyberspace.

The International Telementor Program creates project-based online mentoring support for students and teachers in classrooms and home environments with a focus on serving a diverse student population. With the widespread use of computers, modems, Internet connections, and e-mail software, students and their mentors can break down the barriers of time and distance using the cyberspace and makes distance learning a reality in various ways such as:

i) **Ask an Expert**

Ask an expert formats are generally a single exchange where a student poses a question and the answer is provided by an expert in the field. In some formats, these questions and answers are posted in cyberspace for other students to see and for future reference.

ii) **Pair Mentoring**

Pair mentoring involves a long-term relationship between a student and a volunteer that combines educational and social development goals. The mentor serves as an adult role model, while providing learning opportunities and

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47 Available at http://www.telementor.org/research/Research-2002-1.pdf
enhanced understanding into a specific topic area through the use of e-mail, text, audio, and video.

iii) Group Mentoring

In group mentoring an expert or group of expert’s are matched with a group of learners through a technology medium. Group mentoring may be either a single exchange or conducted over an extended period of time. With the recent use of electronic mail as a communication tool “telementoring” programs (formal and informal) have begun to flourish. The purpose of many telementoring programs has been to match students with experienced professionals to provide “real world” insights into the curriculum. As a result of these technological advances, many teachers are now exploring the effectiveness of online telementoring programs with students in their classes.

g) Cyberspace and Portfolios

Portfolio refers to a collection of work. Portfolios have been used in teacher education in different formats, in a variety of ways and for different purposes. Portfolios can be used as evaluation tools, to illustrate good teaching, to demonstrate progress, to integrate collection of work, to share work, and to support reflection and professional growth. The cyberspace-based portfolio may be defined as “a user’s hypertextually linked set of electronic texts that have been created for and placed on the World Wide Web”. The cyberspace acts like a global, distributed hypermedia system. It provides a standard for structuring applications as hypertext documents that can be “published” on the Internet. The literature suggests that the cyberspace has more to offer in addition to the benefits of other types of electronic portfolios. Cyberspace based portfolios are easy to edit, permitting a continuity of documentation of growth with the control of distribution.

in the hands of the prospective teacher. Furthermore, cyberspace based portfolio development provides the opportunity for revisions. Substantial revisions involve reflection on course content encompassing processes like reordering and reevaluating, resulting in new insights. Another aspect of the cyberspace is its public nature since it makes the portfolio available to a variety of audiences. The cyberspace environment permits prospective teachers the flexibility to maintain their portfolios in a cyberspace that can be remotely accessed from anywhere at any time, by the prospective teacher, faculty, peers, and potential employers. Moreover, the cyberspace based portfolio has the potential of being viewed by a greater number of people. Thus, greater effort and pride is taken to create a public document. In addition, the public nature of the cyberspace based portfolios provides the opportunity for prospective teachers to give and receive feedback from peers or professors instantly. They are easier to share, making it possible for prospective teachers to see a variety of exemplars, view other perspectives of teaching and learning, and challenge their own practices and beliefs. Cyberspace based portfolios provide a dynamic and powerful pedagogical tool since they combine the potential of hypermedia to support making thinking visible and enhance learning and the potential of portfolio development to support reflection and metacognition\(^\text{50}\). As the Internet and educational computing lead towards the twenty-first century, there is little doubt that the cyberspace will provide the cornerstone for all kinds of learning and teaching methodologies.

2.7 Cyber space and Health

Cyber space, the largest network of connected computers, is becoming the ultimate frontier to access information for health providers. Millions of people from around the world are seeking health and medical information in the

cyberspace, and the benefits of online medical sites are wide ranging. Health care consumers no longer have to snatch a few moments of their doctor’s limited time, search through the aisles of a local book store, or gain access to a medical school’s library to get information on their problems. Now, information about numerous medical conditions, therapies, and remedies—both proven and unproven—is available to anyone with cyberspace access. Health care systems are now linked into broad computer networks, which allow them to expand their reach and effectiveness by bringing medical services to the patient instead of the patient having to go to them. Health providers can now use e-mail and live audio and video to communicate and interact with other providers and patients. And by using the Internet, increasing numbers of consumers and health care providers are gaining free access to an expanding volume of health related information that they couldn’t previously get to. In addition, the cyberspace may now be able to provide much-needed medical information and services to rural and underserved populations. The delivery of nursing or medical services in cyberspace is generally referred to as “telemedicine” or “telehealth.”

Developments of cyberspace have become a useful educational resource in medicine, and describe modest ideas in computer network use. Basic resources are electronic mailing (E-mail), discussion groups, file transfer, and browsing the World Wide Web. E-mail brings physicians with common interest together. Surgeons employ it as a communicating tool. Discussion groups permit debate including clinical cases, operations, techniques research, career opportunities, and meetings. File transfer provides the opportunity of retrieving archives from public libraries. The www is the most resourceful tool due to its friendly interface and ease of navigation. Patients and the public are using the cyberspace to disseminate

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or provide access to health and lifestyle information or services. Pressures towards the use of cyberspace include\textsuperscript{52}:

i) \textit{Patient demand}

Information and services can be delivered in a personalized way, where and when they are wanted. Cyberspace provides simple, easy access to health information, support services, and goods. It can lead to loss of the general practitioner’s role as mediator (for example, a patient and specialist could email each other directly) and enhanced self expression (for example, in weblogs).

ii) \textit{New functions}

Cyberspace can link previously distinct services and information. For example, all the information and forms from different government departments relevant to having a baby could be accessed from one portal.

iii) \textit{Democracy}

Cyberspace could allow citizens to form pressure groups, lobby for services, or even set up their own health organizations.

iv) \textit{Health workforce}

Cyberspace may help deal with staff shortages or requests from staff for improved working lives (for example, working from home).

v) \textit{Technology}

Futuristic devices (like sensors and drug delivery systems) are made possible as technology becomes more reliable, functional, and cheaper.

vi) \textit{National policy}

Cyberspace could help move towards services that are better coordinated, promote equity and patient independence, and adhere to government targets and lower carbon dioxide emissions (eHealth favours home based care)

vii) *Economics*

Cyberspace shifts some costs to the patient or community.

viii) *Safety*

Cyberspace may allow improved self management and avoidance of exposure to risk.

Cyber space may soon cater for patients, careers, and others by providing following facilities:\[53:\]

- *Links to external sites that have been selected for quality* for example, patient support organisations and leaflets
- A secure personal page for each patient providing access to their official medical record, including their lists of drugs, results of tests, copies of letters, and discharge summaries
- A link which allows patients to construct their own “health biography,” and enter data about long term conditions, rather than using a diary card
- Forms to book appointments or request repeat prescriptions
- A secure structured clinical enquiry form to capture patient symptoms and prompt a response from a general practitioner in the requested time.

Thus developments in computer technology, the Internet, and wireless and satellite telecommunications have led to major innovations in the nature and delivery of health care that have broad implications for the way people receive health information and treatment.

### 2.8 Cyberspace and Social Implications

In the emergent realm of consociated contemporaries, human individuals come to form a special type of social relationship that combines both immediacy

\[53\] Ibid.
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and anonymity. In corporeal co-presence, individuals interact with each other in the abundance of embodied information conveyed through facial expression, posture, gesture, and other types of body language. By orienting themselves toward each other face to face, co-present individuals form a relation marked by immediacy and embodiment. Emergence of telepresence brings into existence not only a new mode of human communication, but also a new social realm in the life world, in which individuals develop new forms of relationships with others and new ways of understanding themselves. In addition to the realm of consociates, where people interact with one another as intimates in a subjective meaning context, and the realm of contemporaries where people interact with one another as strangers in an objective meaning context, there is now a third realm – the realm of consociated contemporaries where people interact with one another as “intimate strangers”\textsuperscript{54}. This kind of voluntary mutual disclosure and intimate contact creates an interpersonal environment in which the so-called “pure relationships” grow and thrive. Pure relationships are established solely based on shared interests and mutual liking, and exist primarily in the domain of love and friendship. Cyberspace is providing number of tools to achieve social ends such as marriage, religion, governance, etc.

a) Cyberspace and Marriage

Virtual Worlds offer a new environment to meet, communicate and perform rituals - the so called Online-Rituals - in a virtual reality, irrespective of geographical and real-life body conditions. An increasing number of residents use this World not only as a kind of virtual playground but as an enlargement of their

real-life possibilities that has to be taken seriously: Cyberspace is increasingly used for match making process. Matchmaking is the process that brings requester and service provider agents together. A provider agent advertises its know-how, or capability to a middle agent that stores the advertisements. An agent that desires a particular service sends a middle agent a service request that is subsequently matched with the middle agent’s stored advertisements. The middle agent communicates the results to the requester. The matching process uses five filters, namely context matching, comparison of profiles, similarity matching, signature matching and semantic matching. Different degrees of partial matching can result from utilizing different combinations of these filters. Selection of filters to apply is under the control of the user (or the requester agent). In Web resource search techniques, search engines provide more relevant data for the user concerns, according to their relevance to user’s query. They propose the directory of services to record descriptions of each information server, called a server description. A user sends his query to the directory of services, which determines and ranks the servers relevant to the user’s request. Both the query seeker and the server are described using boolean expression. The search method is based on the similarity measure between the two boolean expressions. The proliferation of a number of match making like Jeevansathi.com, Bharat matrimony, Shadi.com, etc. shows the increasing impact of cyberspace in our social lives. The users are both socially and religiously very active and consequently transfer real-life activities and therefore also rituals into virtual space. There are many people who offer their services as


wedding designers with a huge area full of wedding complexes in which currently approx. four to eight weddings take place per week. Different wedding rituals designed and performed in Second Life, for example, show the possibility to identify processes of ritual transfer and of ritual patch working57.

b) Emerging roles for third parties in cyberspace

In ‘real’ space, third parties have always been useful to facilitate transactions. With cyberspace opening up, it is to be expected that intermediation will also develop in a virtual fashion. First, virtualization of the market place has paved the way for ‘cybermediaries’, who broker between supply and demand of material and informational goods. Secondly, cyber communication has created new uncertainties concerning informational security and privacy. Also, as in real space, transacting supposes some decency with one’s partners. These needs are being addressed by Trusted Third Parties, anonymizers, escrow arrangements, facilitators and external auditing. Virtual reputation tracking mechanisms are being developed as well. Finally, in order to resolve disputes, mediators and arbitrators have started offering their services online58.

c) Cyberspace and Religion

The evolving technology of cyberspace, prefigured at present by the Internet, will have an impact on religion both as a social institution and in the spiritual life the individual. At least there are two countervailing tendencies in terms of the cyberspace’s impact on religious institutions and ideologies. First is the pull of individuals away from previous organizational enclosure and the potential for boundary- crossing contact between persons of different faith’s and

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world views. Creatively speaking this may lead to the creation of the religious hybrids, idiosyncratic theologies, and informal liaisons between strange bedfellows. At the same time, in a more destructive vein, there is increased opportunity for conflict and even computer mediated warfare between religious individuals who trigger each other’s defenses. Second, if the cyberspace evolves in the direction of ever-increasing sophistication and expense then religious institutions and hierarchies, who have far more resources available than do individuals, are likely to reassert their presence. While technical innovations in the cyberspace are likely to encourage the development of new forms of ritual and other interactive religious innovations, it is also likely that the ready availability of taboo material, competitive world views, and addictive entertainment in cyberspace will trigger spiritual crisis for many people. Ultimately the spiritual inner life of individuals may atrophy as the net’s commerce in readymade images and virtual realities increases, exacerbating a tendency already present within western culture and has now started influencing traditional Indian culture. The most visible impact of the cyberspace is manifested in changes cleaving across liberal and traditional concepts of Islam – in the emerging notion of global Islamic identity and the construction of transnational public sphere.

2.9 Cyberspace and Governance

Cyberspace can be used as interactive and promotional tool. Cyber space can enhance effective governance and can most certainly expose new opportunities for growth and empowerment. The notion of ‘e-governance’ provides us with another dimension of the interface between local government and information

technology. Essentially, e-governance refers to the ability of government agencies to interact with the public on-line in the delivery of services and in fulfilling their pre-designated mandates. The World Bank defines e-governance as “the use by government agencies of information technologies that have the ability to transform relationships with citizens, businesses, and other arms of government”\textsuperscript{61}. E-governance highlights several elements of good governance such as transparency, accountability, participation, social integration, public financial management reform and development\textsuperscript{62}. The establishment of e-governance is a two stage process, the first stage enabling Council customer interactions on-line, the aim being to make it possible to conduct 80% of Council interactions on-line within the next 3–4 months. Stage two will aim to achieve seamless governance through enabling government transactions that will involve all three tiers of government (central, state, and local), on-line. Cyberspace is intended to conduct and promote discussion and consultation as part of an e-democracy process, enabling interaction with officials and politicians\textsuperscript{63}.

2.10 Conclusion

More and more people around the world are spending an increasing portion of their time surfing the cyberspace or operating in cyberspace. In the past few years cyberspace has become an integral part of people’s everyday lives. People get their information from cyberspace, obtain their entertainment there, do business

in cyberspace, and even develop their social relationships there. Instead of going to school, university, the public library, the museum, or the theatre, people view art, obtain knowledge, and spend their leisure time in Cyberspace. Instead of driving to the supermarket, the bank, or the social welfare bureau, people click several buttons on their computer to do business, communicate with government agencies, or settle their finances\textsuperscript{64}. The speed needed is available in cyberspace. One can do research, market, communicate, observe, network, watch, advertise, learn, correspond, read, and profit all by just pointing and clicking.

Traveling the cyberspace can broaden horizons and enhance professional and personal life in innumerable ways. It directly supports the operation of all sectors of our economy—energy (electric power, oil and gas), transportation (rail, air, merchant marine), finance and banking, information and telecommunications, public health, emergency services, water, chemical, defense industrial base, food, agriculture, and postal and shipping. The reach of cyberspace exceeds physical bounds. For an increasing number of people some real-world activities are becoming and will become marginal. The increasing human activity in the rapid development of cyberspace has given rise to a completely new economic sector and to new rapid flows of information, products and services across the internal and external borders. The new sector also contributes considerably to the economic growth in many areas in India. Cyberspace is transforming social and cultural norms, affecting language, creating new communities, drawing new borders, and can even be thought of as changing the definition of the self\textsuperscript{65}. If one is looking for success in the 21\textsuperscript{st} century, it has become sin quo non to be comfortable in cyberspace.


\textsuperscript{65}Ibid.
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The use of cyberspace today is greater than its use in the past. The dependability of cyberspace has increased and it plays a big part in our lives. Cyberspace is today one of the great social and legal frontier. It is increasingly being used in offices, schools, businesses, and homes. Suffice it to say that the number of people in cyberspace will continue to increase dramatically, as will the volume of electronic commerce around the world. Thus we are moving rapidly to the point where it is possible to assert that everything depends on cyberspace.